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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/819,275	03/28/2001	Gregory Korenevsky	NCR-9716	4307
26890	7590	12/23/2003	EXAMINER	
JAMES M. STOVER NCR CORPORATION 1700 SOUTH PATTERSON BLVD, WHQ4 DAYTON, OH 45479			LOHN, JOSHUA A	
			ART UNIT	PAPER NUMBER
			2114	

DATE MAILED: 12/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/819,275

Applicant(s)

KORENEVSKY ET AL.

Examiner

Joshua A Lohn

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-15, 19 and 22-26 is/are rejected.
- 7) ☒ Claim(s) 5, 6, 16-18, 20 and 21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other: _____

FIRST NON-FINAL ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 7-12, 19, and 22-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meth et al., United States Patent number 6,393,583, filed October 29, 1998 in view of Hirayama et al., United States Patent number 5,922,078.

As per claim 1, Meth discloses a parallel application including parallel operators that functions by sending checkpoint requests to each of the plurality of parallel operators, see column 7, lines 1-2. Meth also discloses receiving and processing messages from one or more of the plurality of parallel operators, see column 7, lines 15-67. Meth discloses a coordinating of the time for taking a checkpoint, see column 6, lines 45-49, however Meth fails to disclose setting a specific time interval and waiting for the interval to take the checkpoint.

Hirayama discloses setting a time interval to a next checkpoint, see column 8, lines 58-63, and waiting until the time interval expires to take a checkpoint, see column 9, lines 15-20.

It would have been obvious at the time to one skilled in the art at the time of the invention to include the time interval of Hirayama with the checkpointing methods of Meth.

This would have been obvious because Meth discloses coordinating checkpoints with a specified time limit, see column 6, lines 45-49. While Meth does not provide for a means of setting this time limit, Hirayama discloses an obvious means managing a time limit, see column

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8, lines 58-63. It would have been obvious to use this time limit of Hirayama to aid in the coordinating of Meth and control waiting for transmitting a checkpointing request.

As per claim 2, Meth discloses receiving a ready message from each of the plurality of parallel operators indicating the parallel operator that originated the message is ready to accept checkpoint requests, see column 6, lines 64-67.

As per claim 3, Meth discloses receiving a checkpoint information message, including checkpoint information, from one of the plurality of parallel operators, and storing the checkpoint information along with an identifier for the one of the parallel operators, in a checkpoint data store, see column 8, line 66 through column 9, line 7.

As per claim 4, Meth discloses receiving a ready to proceed message from one of the plurality of parallel operators and marking the one of the plurality of parallel operators as ready to proceed, see column 7, lines 50-60. Meth also discloses if all of the plurality of parallel operators has been marked as ready to proceed, marking a current checkpoint is good, see column 7, lines 61-67.

As per claim 7, Hirayama discloses receiving a non-recoverable error message form one of the plurality of parallel operators, see column 12, lines 43-44. It is obvious the Hirayama discloses sending terminate messages to the plurality of parallel operators. This is obvious because Hirayama teaches of restarting from previous checkpoint after failure, see column 12, lines 43-45, and a restart is begun by terminating current operations.

As per claim 8, Hirayama discloses restarting the plurality of parallel operations, see column 12, lines 44-45

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As per claim 9, Hirayama discloses sending initiate restart messages to the plurality of parallel processors, see column 12, lines 55-61. Hirayama also discloses processing the restart messages from the plurality of parallel processors, see column 13, lines 35-41.

As per claim 10, Meth discloses that the restart operation includes receiving an information request message from one or more of the plurality of parallel operators, in the form of a checkpoint file request, and retrieving checkpoint information regarding the one or more of the plurality of parallel operators from the checkpoint data store, by accessing the checkpoint file, see column 10, lines 57-65. Meth also discloses sending the retrieved information to the one of the plurality of parallel operators to allow state restoration, see column 11, lines 1-3.

As per claim 11, Hirayama discloses receiving a ready to proceed message from one of the plurality of parallel processors, in the form of the fault notification, see column 12, lines 55-61. Hirayama also discloses marking the one of the plurality of parallel operators as ready to proceed after receiving the fault notification message indicating a need to restart, see column 12, lines 55-61. Hirayama finally discloses sending proceed messages to all of the plurality of parallel operators if all of the plurality of parallel operators have been marked as ready to proceed, as shown in the timing of the check point acquisition, see column 13, lines 6-10.

As per claim 12, Hirayama discloses receiving an error message from one of the plurality of parallel operators, see column 12, lines 43-44. It is obvious the Hirayama discloses sending terminate messages to the plurality of parallel operators. This is obvious because Hirayama teaches of restarting from previous checkpoint after failure, see column 12, lines 43-45, and a restart is begun by terminating current operations.

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As per claim 19, Meth discloses a control component for checkpoint and restart that functions by sending checkpoint requests to each of the plurality of parallel operators, see column 7, lines 1-2. Meth also discloses receiving and processing messages from one or more of the plurality of parallel operators, see column 7, lines 15-67. Meth discloses a coordinating of the time for taking a checkpoint, see column 6, lines 45-49. Meth also discloses an operator receiving a checkpoint request message on a control data stream, see column 7, lines 1-2, where the operators are sent the Checkpoint Do message. Meth also discloses waiting to enter a state suitable for checkpointing, this includes all processing before committing a checkpoint, see column 8, lines 13-23. Meth also discloses sending a response message on the control stream, see column 8, line 19. However, Meth fails to disclose setting a specific time interval and waiting for the interval to take the checkpoint.

Hirayama discloses setting a time interval to a next checkpoint, see column 8, lines 58-63, and waiting until the time interval expires to take a checkpoint, see column 9, lines 15-20.

It would have been obvious at the time to one skilled in the art at the time of the invention to include the time interval of Hirayama with the checkpointing methods of Meth.

This would have been obvious because Meth discloses coordinating checkpoints with a specified time limit, see column 6, lines 45-49. While Meth does not provide for a means of setting this time limit, Hirayama discloses an obvious means managing a time limit, see column 8, lines 58-63. It would have been obvious to use this time limit of Hirayama to aid in the coordinating of Meth and control waiting for transmitting a checkpointing request.

As per claim 22, Hirayama discloses determining that one of the parallel operators has experienced a non-recoverable error, and in sending a response message to the reset and checkpoint controller, or root node, the parallel component associated with the one parallel operator causes the computer to send a non-recoverable error messages to the root node, see the fault indicator in column 12, lines 55-61. Hirayama also discloses the root node controller receiving the fault notification and sending a stop processing message to the plurality of parallel operators in response to the non-recoverable error message, see the issuing of roll-back instructions, column 13, lines 35-41, which will stop all current processing.

As per claim 23, Hirayama discloses the controlling unit sending an initiate restart message to one of the plurality of parallel operators, which is part of the fault response roll back operation, see column 12, lines 43-45.

As per claim 24, Meth discloses that the restart operation includes an information request message form one or more of the plurality of parallel operators, in the form of a checkpoint file request, being sent to the controller and the controller retrieving checkpoint information regarding the one or more of the plurality of parallel operators from the checkpoint data store, by accessing the checkpoint file, see column 10, lines 57-65. Meth also discloses sending the retrieved information to the one of the plurality of parallel operators to allow state restoration, see column 11, lines 1-3.

As per claim 25, Hirayama discloses a ready to proceed message from one of the plurality of parallel processors being transmitted, in the form of the fault notification, see column 12, lines 55-61. Hirayama also discloses marking the one of the plurality of parallel operators as ready to proceed after receiving the fault notification message indicating a need to restart, see column 12,

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lines 55-61. Hirayama finally discloses sending proceed messages to all of the plurality of parallel operators if all of the plurality of parallel operators have been marked as ready to proceed, as shown in the timing of the check point acquisition, see column 13, lines 6-10.

As per claim 26, Hirayama discloses an error message form one of the plurality of parallel operators being sent, see column 12, lines 43-44. It is obvious the Hirayama also discloses sending terminate messages to the plurality of parallel operators. This is obvious because Hirayama teaches of restarting from previous checkpoint after failure, see column 12, lines 43-45, and a restart is begun by terminating current operations.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 13-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Meth et al., United States Patent number 6,393,583, filed October 29, 1998.

As per claim 13, Meth discloses an operator receiving a checkpoint request message on a control data stream, see column 7, lines 1-2, where the operators are sent the Checkpoint Do message. Meth also discloses waiting to enter a state suitable for checkpointing, this includes all processing before committing a checkpoint, see column 8, lines 13-23. Meth also discloses sending a response message on the control stream, see column 8, line 19.

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As per claim 14, Meth discloses receiving a checkpoint marker on an input data stream, see column 8, line 13. Meth discloses finishing writing data to an output data stream, see column 8, lines 35-40, and sending a checkpoint marker on the output data stream, see column 8, line 19.

As per claim 15, Meth discloses a blocking operation to determine when all of the parallel operator's outstanding input/output requests have been processed, see column 8, lines 50-65.

Allowable Subject Matter

Claims 5, 6, 16-18, 20, and 21 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion


The prior art made of record and not relied upon is considered pertinent to applicant's disclosure is provided on form PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua A Lohn whose telephone number is (703) 305-3188. The examiner can normally be reached on M-F 8-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoleil can be reached on (703) 305-9713. The fax phone number for the organization where this application or proceeding is assigned is (703) 746-7239.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

JAL


SCOTT BADERMAN
PRIMARY EXAMINER